# MATERIAL SAFETY DATA SHEET

**SRM Supplier: National Institute of Standards and Technology**
**Standard Reference Materials Program**
**Bldg. 202 RM 211**
**Gaithersburg, Maryland 20899**

**MSDS Coordinator: Joylene W.L. Thomas**
**Phone: (301) 975-6776**
**ChemTrec: 1-800-424-9300**
**FAX: (301) 926-4751**
**E-mail: SRMMSDS@nist.gov**

**SRM Number: 1630a**
**MSDS Number: 1630a**
**SRM Name: Trace Mercury in Coal**
**Date of Issue: February 10, 1999**

## SECTION I. MATERIAL IDENTIFICATION

**Material Name:** Trace Mercury in Coal

**Description:** Coal is formed naturally from fossilized plants, consisting of amorphous carbon with various organic and inorganic compounds. The compounds form conjugated polyaromatic, polyunsaturated, and polysaturated ring structures with heterocycles containing oxygen, nitrogen, and sulfur. Bituminous coal includes coal between anthracite (the hardest coal) and lignite (the softest), with fixed carbon < 86 % and volatile matter >14 %.

SRM 1630a consists of a 50 g bottle of bituminous coal with a nominal sulfur value of 1.5 %. It was ground to pass a 60-mesh sieve and homogenized.

**Other Designations:** Coal Dust (bituminous coal, ground bituminous coal)

**CAS Registry Number:** N/A

**DOT Classification:** Not regulated by DOT

**Manufacturer/Supplier:** Available from a number of suppliers

## SECTION II. HAZARDOUS INGREDIENTS

| Hazardous Component | Nominal Concentration (%) | Exposure Limits and Toxicity Data |
|---|---|---|
| Coal Dust (~ 3 % $SiO_2$) | ~ 100 | OSHA PEL-TWA: 2 mg/m$^3$ (respirable quartz fraction with < 5 % $SiO_2$) |
| | | OSHA PEL-TWA: 0.1 mg/m$^3$ (respirable quartz fraction with > 5 % $SiO_2$) |
| | | ACGIH TLV-TWA: 2 mg/m$^3$ (respirable dust fraction with < 5 % $SiO_2$) |

## SECTION III. PHYSICAL/CHEMICAL CHARACTERISTICS

| Bituminous Coal |
|---|
| **Appearance and Odor:** A black powder with little or no odor. |
| **Specific Gravity:** 1.2 – 1.7 |
| **Vapor Pressure (at 25 °C):** Negligible |
| **Water Solubility:** Negligible |

## SECTION IV. FIRE AND EXPLOSION HAZARD DATA

**Flash Point:** N/A **Method Used:** N/A **Autoignition Temperature:** > 601 °C (cloud)
> 200 °C (layer)

**Flammability Limits in Air (Volume %):** **UPPER:** None reported
**LOWER:** > 50 g/m$^3$ (0.05 oz/ft$^3$)

**Extinguishing Media:** For small fires use dry chemical, sand, earth, water spray, or regular foam. Use water spray, fog, or regular foam for large fires involving coal dust.

**Unusual Fire and Explosion Hazards:** This material is a fire hazard when exposed to heat or flames. Airborne coal dust is an explosion hazard.

**Special Fire Procedures:** Since the fire may produce toxic fumes, firefighters should wear self-contained breathing apparatus and full protective clothing.

## SECTION V. REACTIVITY DATA

**Stability:** __X__ **Stable** _____ **Unstable**

**Conditions to Avoid:** Avoid heat, flames, and sources of ignition.

**Incompatibility (Materials to Avoid):** Keep this material from strong oxidizing agents.

**Hazardous Decomposition or Byproducts:** Thermal oxidative decomposition of coal dust can include oxides of carbon, nitrogen, and sulfur, partially oxidized hydrocarbons, soot, and fly ash.

**Hazardous Polymerization:** _____ **Will Occur** __X__ **Will Not Occur**

## SECTION VI. HEALTH HAZARD DATA

**Route of Entry:** __X__ **Inhalation** _____ **Skin** _____ **Ingestion**

**Health Hazards (Acute and Chronic):** Exposure to coal dust can occur through inhalation, ingestion, and eye contact. Dust may cause minimal irritation to the eyes and respiratory tract. Prolonged and repeated contact to dust may cause skin irritation. Coal workers' pneumoconiosis is the occupational disease caused by prolonged retention of abnormal amounts of dusts in the lungs. It can occur after years of excessive exposure to respirable coal dust in coal mining, handling, and processing. Workers with rheumatoid arthritis and the simple coal workers' pneumoconiosis may also have Caplan's Syndrome which involves rapidly developing lung damage.

**Signs and Symptoms of Exposure:** Coughing, wheezing, and shortness of breath. Long term effects include chronic bronchitis and emphysema.

**Medical Conditions Generally Aggravated by Exposure:** Any individual with a chronic pulmonary disorder should protect against exposure to bituminous coal dust.

**Listed as a Carcinogen/Potential Carcinogen:**

| | Yes | No |
|---|---|---|
| In the National Toxicology Program (NTP) Report on Carcinogens | ___ | X |
| In the International Agency for Research (IARC) Monograph | ___ | X |
| By the Occupational Safety and Health Administration (OSHA) | ___ | X |

**EMERGENCY AND FIRST AID PROCEDURES:**

**Skin Contact:** Remove contaminated shoes and clothing. Wash affected area well with soap and water. Obtain medical assistance if necessary.

**Eye Contact:** Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Obtain medical assistance.

**Inhalation:** If inhaled, move the victim to fresh air. If breathing is difficult, give oxygen; if the victim is not breathing, give artificial respiration. Obtain medical assistance if necessary.

**Ingestion:** If ingestion occurs, wash out mouth with water. **DO NOT** induce vomiting. Obtain medical assistance immediately.

**TARGET ORGAN(S) OF ATTACK:** The lungs.

## SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

**Steps to be taken in Case Material is Released:** Notify safety personnel of leaks and spills. Remove sources of heat or ignition and provide adequate ventilation. Personnel performing the clean-up should use protection against inhalation. Clean up coal dust in a manner that avoids dispersing particulates into the air or environment. A water spray may be used to cautiously wet down coal dust to avoid raising dust. Use nonsparking tools; collect dust in a covered metal container for reclamation or for disposal.

**Waste Disposal:** Follow all federal, state, and local authorities.

**Handling and Storage:** Provide adequate ventilation where operating conditions (heating and spraying) may create excessive vapors and mists. Use explosion proof equipment. Provide approved respiratory apparatus for non-routine or emergency use where ambient concentrations of coal dust exceed prescribed exposure limits. Workers should use appropriate personal protective clothing and equipment that must be carefully selected, used, and maintained to be effective in preventing skin and eye contact with coal dust. The selection of the appropriate personal protective equipment should be based on the extent of the workers's potential exposure to coal dust. An eye wash station and washing facilities should be readily available near handling and use areas.

**Note:** Contact lenses pose a special problem; soft lenses may absorb irritants and all lenses concentrate them. **DO NOT** wear contact lenses in the laboratory.

Store material in closed containers in a cool, dry, well ventilated area away from sources of heat, sparks, open flames, and oxidizing agents. Protect containers from physical damage.

## SECTION VIII. SOURCE DATA/OTHER COMMENTS

**Sources:** Occupational Safety and Health Guidelines for Coal Dust (Less than 5 % $SiO_2$) http://www.osha-slc.gov/SLTC/healthguidelines/coaldust-less5percentsio2/index.html. Revision Date: 10 June 1998.